

DESCRIPTIONS OF TWO NEW AUSTRALIAN SPECIES OF
PSYCHOPSIS (ORDER NEUROPTERA PLANIPENNIA).

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(Plate III., and one Text-figure).

The archaic family Psychopsidae has its head-quarters in Australia, no less than eight species having already been described from that region, included in three genera. The systematic study of the family has recently (1919 *a*) been brought up to date by myself, and the life-history of *Psychopsis elegans* Gnér. has been dealt with fully in a further paper (1919 *b*). Since these papers were published, two fine new species of the genus *Psychopsis* have been discovered, one by Miss Margaret Waterhouse at Woodford, Blue Mts., N.S.W., and the other by Mr. E. J. Dumigan, at Clermont, Central Queensland. These two species are described in this paper, and each is dedicated to its discoverer.

Before proceeding to give the actual descriptions of these species, it will be necessary to emphasise one or two special points in the venational scheme for which a special terminology has been adopted in my previous paper (1919 *a*).

The *gradate series* are series of cross-veins arranged in a step-like formation between the closely contiguous branches of the main veins in this family. Special names have been given to them as follows:—

(1). The *costal gradate series* connects the enlarged costal veinlets which arise from Sc and cross the very broad costal space.

(2). The *terminal gradate series* runs between the apical margin and the disc, from apex to tornus, and is a continuation of the costal series round the outer margin of the wing in those forms where the costal series is complete.

(3). The *discal gradate series* is more or less parallel to the terminal, and separates the disc from the marginal area.

(4). The *internal gradate series* crosses the disc near its middle. In a few species, either scattered cross-veins or portion of a further gradate series may be found between the internal and discal series, but such do not occur in either of the species dealt with in this paper.

Navás (1916) used the presence or absence of the various gradate series as one of his principal characters for dividing the genus *Psychopsis* Newman into several new genera. A further character which he made use of was the presence or absence of a fusion or anastomosis of M_{3+4} with Cu_1 in the forewing. In my previous paper, I showed not only that these characters were very variable, but also that, even if they could be used, they would separate closely allied species into distinct tribes and genera. In the descriptions of the two new species in this paper, their closest allies will be indicated, and it will be shown that, in

each case, the condition of the gradate series and fusion of media with cubitus differs radically from that of these latter; thus proving, if additional proof were needed, that my suppression of the Navásian tribes and genera was fully justified.

I should like here to thank Mr. G. A. Waterhouse and Mr. E. J. Dumigan for presenting to me the types of these beautiful insects, which are now placed in the Cawthron Institute Collection; and Mr. W. C. Davies, Curator of the Cawthron Institute, for the excellent photographs which he has made of the types, which are shown on Plate

PSYCHOPSIS DUMIGANI, n.sp.

(Plate III., fig. 1; Text-fig. 1a.).

♂. Total length 9.4, abdomen 5.5, forewing 15, hindwing 13, expanse 32 mm.

Head:—*Epicranium*, *frons* and *eyes* blackish, with some irregular brown markings on occiput and three pale brown patches behind antennae, as shown in Text-fig. 1a. *Antennae* 3 mm., segs. 1-2 pale testaceous, the rest fuscous, 3-10 with fine whitish basal annuli. *Face* and *mouth-parts* testaceous.

Thorax:—*Pronotum* dull brownish with a thin transverse blackish band and carrying numerous long hairs, some greyish, some blackish. *Mesonotum* brownish, hairy. *Metanotum* testaceous, with two large dark fuscous blotches. *Sides* and *underside* testaceous. *Legs* pale testaceous, tarsi slightly infuscated.

Abdomen short, cylindrical, very hairy, dark brown above, slightly paler along the middle line, pale testaceous beneath; last segment paler. *Appendages*:—both superiors and inferiors broad, hairy, held in a nearly vertical plane; inferiors somewhat larger than superiors and partially overlapping them from below.

Wings very hairy. *Forewing* with brownish venation, the membrane tinged with pale brown and heavily marked with a complicated pattern of very dark brown, almost black, as shown in Plate III., fig. 1; a tinge of mauve on the inner side of the spot situated at the tornus. The most conspicuous markings are four transverse dark fasciae, the first incomplete and forked posteriorly below the vena triplica, the second incomplete and simple, the last two complete and converging posteriorly to meet in the large blotch at the tornus; there are also a number of irregular, oblique dark blotches along the posterior margin. *Hindwing* with pale testaceous venation, the membrane subhyaline, slightly clouded with brownish, especially at the end of the vena triplica; a rather small and indistinctly outlined brown spot, about 0.5 mm. diameter, is situated near end of Cu, about 1.5 mm. from margin. In the forewing, M_{3+4} is fused with Cu_1 from about half-way onwards. *Radial sector* with 12-14 branches in forewing, 9 in hind. *Gradate series*:—Forewing with costal, discal and internal series complete, terminal series almost complete. Hindwing with discal series complete, costal and terminal almost complete, internal series incomplete, consisting of only 4 cross-veins.

Types:—Holotype and paratype males, in Cawthron Institute collection.

Habitat:—Clermont, Central Queensland, taken at light by Mr. E. J. Dumigan. (Holotype, Nov. 11th, 1919; paratype Nov. 1st, 1920).

The paratype is somewhat smaller than the holotype, and is only in mediocre condition.

The name is given as a dedication to the discoverer, Mr. E. J. Dumigan of Clermont, Queensland.

This species forms a collecting link between the *elegans*-group of species with pinkish markings and a definite angle at the tornus, and the *insolens*-group of smaller-sized species with black, brown or grey markings and rounded tornus.

In structure and venation it comes closest to *Ps. elegans* Guér., the condition of the gradate series being the same, as also the fusion between media and cubitus in forewing. The heavy black markings, however, are very distinct, and the only trace of the *elegans*-type of colouration is in the touch of mauve near the tornus. The species is also related to *Ps. coelivagus* Walk., which it resembles in its heavy blackish markings, but can be at once distinguished from it by the less rounded wings, and by the fact that *Ps. coelivagus* has a pure white venation, with the heavy blackish pattern of a much more metallic appearance and specialised form, while the arrangement of the gradate series is different also.

PSYCHOPSIS MARGARITA, n.sp.

(Plate III., fig. 2; Text-fig. 1b.).

♂. Total length 11, abdomen 7, forewing 18, hindwing 14, expanse 37 mm.

Head:—*Epicranium* pale testaceous, with hairs of same colour, and with a conspicuous dark pattern as shown in Text-fig. 1b; the dark area almost completely encloses two somewhat oval patches of the pale ground-colour behind the antennae. *Antennae* with basal segment pale testaceous, seg. 2 the same colour ringed with black apically, the rest medium testaceous shading to pinkish brown. *Eyes* black. *Face* pale testaceous with a median subtriangular brownish mark continuing from epicranium across frons on to clypeus, and widening from above downwards. *Mouth-parts* testaceous.

Thorax:—*Pronotum* pale testaceous with hairs of same colour. *Mesonotum* testaceous, marked with blackish spots laterally and with two large spots posteriorly, these latter separated by a narrow pale median line. *Metanotum* testaceous, heavily marked with blackish. *Sides* and *underside* testaceous. *Legs* pale testaceous.

Abdomen short, subcylindrical, with pale testaceous hairs; colour dull testaceous, the last two segments and appendages dull grey. *Appendages*:—Superiors broad, held nearly in a vertical plane, well rounded at apices, hairy; inferiors narrower, more triangular, apices much more pointed.

Wings only moderately hairy, the venation whitish, with the intervening ridges of the membrane showing mother-of-pearl iridescence, and the whole wing very pearly in appearance. *Forewing* with two rusty yellow markings one-fifth from base, one on the vena triplica and one on the cubitus, these two connected by two parallel blackish lines, as shown in Plate III., fig. 2; beyond the end of the vena triplica is a semi-transparent brownish patch bordered distally with black lines, and carrying a postero-distal projection with a conspicuous black spot; the vena triplica carries, about two-thirds from base, two black cross-veins in line, these being above the internal gradate series, and there is a small black spot between Sc and R₁ a little nearer the base; the internal gradate series has its middle four or five cross-veins bordered distally with black; another semi-transparent brownish blotch lies just beyond the lower part of the discal gradate series; a series of irregular fuscous and brownish markings runs along and above the posterior margin from the base outwards to tornus; three or four irregular black spots are present on basal half of posterior border, and two small spots at tornus; other very slight markings along costal and distal margins are as shown in Plate III., fig. 2. *Hindwing* hyaline, except for a large rounded blackish spot just beyond the end of the vena triplica. In forewing, M₃₊₄ approaches Cu₁ a little beyond half-way and is connected with it by a very short cross-vein, but does not fuse with it. *Gradate series*:—Forewing with the costal series incomplete, there being only 6-8 cross-veins basally, the terminal series entirely absent, the discal and internal series complete, the former having 17 and the latter 10 cross-veins in it. Hindwing with costal series very incomplete, consisting of only 3-4 basal cross-veins, the terminal series absent, the discal

series complete, with 12 cross-veins, and the internal series incomplete, with only 4 cross-veins. *Radial sector* with 13-15 branches in forewing, 10-11 in hind.

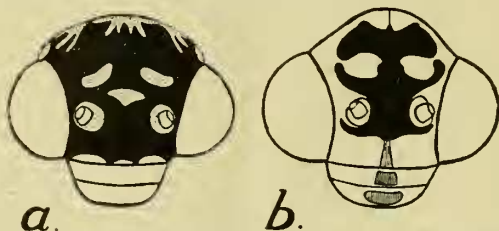
Types:—Holotype and paratype males in Cawthron Institute Collection.

Habitat:—Woodford, Blue Mountains, N.S.W. (A large number were seen inside Mr. Waterhouse's home at Woodford, on Dec. 29th, 1920, and two of these were captured by Miss Margaret Waterhouse).

This interesting species would appear to be very closely allied to *Ps. elegans* Guér., but can be at once distinguished from it by the paler and more pearly wings, with fewer markings, and those without any pink or red colour on them. Venationally, the two species are very distinct, as *Ps. elegans* has complete costal and terminal gradate series, and a fusion of media with cubitus distally in forewing. The hindwing spot is also in a different position in *Ps. elegans*, being placed well below the end of the vena triplica, instead of at the end of it. *Ps. margarita* n.sp. also shows some affinity with *Ps. gracilis* Till., and through that species is connected with *Ps. mimica* Newm. The colour-scheme is also such that it is clear that the more specialised scheme shown in *Megapsychops illidgei* Frogg. could easily be derived from it.

It should be noted that, although *Ps. margarita* n.sp. is clearly far more closely allied to *Ps. elegans* than to any other known species, yet the differences in the gradate series are such that, if Navás's classification were adopted, these two species would be placed in two distinct tribes and genera. This is strong additional evidence of the superficiality of the characters chosen by that author for breaking up Newman's genus *Psychopsis*.

The name of the new species is given as a dedication to its discoverer, Miss Margaret Waterhouse, and also indicates the pearly appearance of the insect, which is more marked than in any other known species.



Text-fig. 1. Colour-pattern of the head in a. *Psychopsis dumigani* n.sp., b, *Ps. margarita* n.sp. (+ 20).

Explanation of Plate III.

Fig. 1. *Psychopsis dumigani* n.sp., holotype ♂. (+ 3.9).

Fig. 2. *Psychopsis margarita* n.sp., holotype ♂. (+ 3.4).

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